

## CLAIMS

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as
1. A method of treating a particulate material comprising particles of an alkaline earth metal carbonate which includes the step of exposing the particulate material to a treatment atmosphere containing a surface treatment agent comprising one or more fatty acids which reacts with and coats the particles of the particulate material, wherein the treatment atmosphere is substantially water free and maintained at a temperature which is above the melting point of the surface treatment agent and at least 120°C and wherein in the treatment atmosphere the concentration of the surface treatment agent and the residence time of the particulate material are such as to provide a chemisorbed coating of the surface treatment agent on at least 75% of the surface area of the particulate material and the amount of physisorbed or unreacted surface treatment agent contained on the particulate material immediately after leaving the treatment atmosphere is not greater than about 0.5% by weight based upon the dry weight of the particulate material.
2. A method as claimed in claim 1 and wherein the chemisorbed coating of the surface treatment agent is provided on at least about 90% of the surface area of the particulate material.
3. A method as claimed in claim 1 or claim 2 and wherein the surface treatment agent comprises one or more saturated fatty acids having from 8 to 26 chain carbon atoms.

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4. A method as claimed in claim 1, claim 2 or claim 3 and wherein the alkaline earth metal carbonate comprises calcium carbonate.

5. A method as claimed in any one of the preceding  
5 claims and wherein the particulate material has a surface area of from about  $3\text{m}^2.\text{g}^{-1}$  to about  $13\text{m}^2.\text{g}^{-1}$ .

6. A method as claimed in any one of the preceding claims and wherein the particulate material is treated by wet processing and dried prior to any  
10 treatment with the said surface treatment agent.

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7. A method as claimed in any one of the preceding claims and wherein a rapid agitation or stirring motion is applied to the particulate material and the surface treatment agent whilst the particulate  
15 material is in the treatment atmosphere.

8. A method as claimed in any one of the preceding claims and wherein the treatment atmosphere is established in a vessel which is externally heated and in which the temperature of the treatment  
20 atmosphere may be externally adjusted and controlled.

9. A method as claimed in any one of the preceding claims and wherein the temperature of the treatment atmosphere is in the range of from  $125^\circ\text{C}$  to  $150^\circ\text{C}$ .

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10. A method as claimed in any one of the preceding  
25 claims and wherein the amount of the surface treatment agent present in the said atmosphere for treatment of the particulate material is in an amount of from about 0.5% to about 1.5% by weight of the particulate material and the particulate material  
30 immediately after leaving the treatment atmosphere

contains about 0.4% by weight or less of unreacted surface treatment agent.

11. A method as claimed in any one of the preceding claims and wherein the amount of surface treatment agent present in the treatment atmosphere is from about 0.8X to about 1.2X where X is the theoretical minimum weight of surface treatment agent required to cover the surface area of the particulate material.

12. A method as claimed in any one of the preceding claims and wherein of the surface treatment agent deposited on the inorganic particulate material at least 80% by weight is chemisorbed, the remainder being unreacted or physisorbed.

13. A method as claimed in any one of the preceding claims and wherein the amount of unreacted surface treatment agent is measured by thermogravimetric analysis.

14. A method as claimed in any one of the preceding claims and wherein the particulate material has a surface area of about  $4\text{m}^2.\text{g}^{-1}$  to about  $6\text{m}^2.\text{g}^{-1}$ , the surface treatment agent comprises at least 60% by weight stearic acid and the amount of surface treatment agent present in the treatment atmosphere is from about 1.0% to about 1.2% by weight based on the weight of the particulate material.

15. A method as claimed in any one of the preceding claims and wherein the particulate material has a surface area of from about  $4\text{m}^2.\text{g}^{-1}$  to about  $6\text{m}^2.\text{g}^{-1}$ , the surface treatment agent comprises at least 85% by weight behenic acid and the amount of surface treatment agent present in the treatment atmosphere

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B<sup>2</sup> cont.

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